PTO 04-1862

CY=WO DATE=19920109 KIND=A1
PN=92-00033

COOKING VESSEL
[Kochgefäß]

Horst Schultz

UNITED STATES PATENT AND TRADEMARK OFFICE
Washington, D.C. February 2004

Translated by: FLS, Inc.

PUBLICATION COUNTRY	(19) :	WO
DOCUMENT NUMBER	(11) :	92-00033
DOCUMENT KIND	(12) : (13) :	A1 PUBLISHED APPLICATION
PUBLICATION DATE	(43) :	19920109
PUBLICATION DATE	(45) :	
APPLICATION NUMBER	(21) :	PCT/EP91/01165
APPLICATION DATE:	(22) :	19910622
ADDITION TO	(61) :	
INTERNATIONAL CLASSIFICATION	(51) :	A47J 36/06; A47J 27/08
DOMESTIC CLASSIFICATION	(52) :	
PRIORITY COUNTRY	(33) :	DE
PRIORITY NUMBER	(31) :	G9007031.3
PRIORITY DATE	(32) :	19900625
INVENTOR	(72) :	SCHULTZ, HORST
APPLICANT	(71) :	SCHULTZ, HORST
TITLE:	(54) :	COOKING VESSEL
FOREIGN TITLE	[54A]:	KOCHGEFÄSS

Description: /1*

The invention relates to a cooking vessel, specifically, a steam pressure cooker, the lid of which is equipped with a thermometer.

This type of cooking vessel is familiar from CH-PS 273673, for instance, according to which a temperature display element is provided in water-proof fashion in the lid's wall between the lid's central knob handle and the outside edge. In the steam cooker that is familiar from DE-OS 3436884, a thermometer is provided in the front part of the lid's handle which reaches across the pot's lid in front of a pressure-limiting valve and projects through the pot's lid into the inside of the pot with a temperature sensor. The indicator of the thermometer, which is configured as a bimetallic thermometer, is rotatable via a scale that is visible in the pot's handle. With the familiar thermometers, the temperature on the inside of the pot can only be measured inaccurately. This is due to the fact that an air cushion can form in the area of the thermometer, which adulterates the temperature measurement, and the temperature measurement is relatively slow in and of itself.

On this basis, it is the objective of the present invention to /2 configure a cooking vessel of the type mentioned at the beginning of the text in such a way that an accurate measurement of the temperature on the inside of the vessel is made possible.

In accordance with the invention, this objective is essentially realized in that the thermometer is provided in the topmost location of the inside space of the vessel where the ventilation system of the inside

* Number in the margin indicates pagination in the foreign text.

of the vessel, for instance, in the form of an automatically responding excess-pressure valve and/or manually operated air-release valve, is/are also located. This guarantees that the temperature on the inside of the vessel is displayed more accurately because of the option of avoiding the formation of an air cushion.

To increase the accuracy of the measurements, the thermometer may project into the inside space of the vessel by means of a heat sensor pin.

The response speed can be further increased in that a ventilation channel extends adjacently to the heat sensor pin. As a result, the emerging air/steam mixture can directly flow along the heat sensor pin.

The ventilation channel may specifically be part of an arbitrarily opened air-release valve.

In an advantageous embodiment of this invention concept, the air-release valve, e.g., has an axially movable valve piston which can be moved into a shut position under the internal pressure of the vessel and into an open position with regard to the ventilation channel by hand.

In a further embodiment of the invention, the valve piston may /3 advantageously be axially guided on the heat sensor pin and the, preferably, screw thread-like ventilation channel can be formed between the valve's piston and the heat-conducting pin. A reliable functioning both of the thermometer and of the air-release valve is thereby guaranteed.

Moreover, what is proposed with the invention is that the thermometer be integrated in a central knob handle of the lid in the generally familiar manner.

For an easy assembly and disassembly, the lid's knob handle can be held on the lid's wall by means of a basic structure which is fixated by means of a threaded pin that projects through the lid wall and by a tightening nut which is screwed on it.

In this case particularly, the valve piston may be axially guided inside the basic structure.

An especially advantageous embodiment provides that, in its upper, shut position, which is assumed under the internal pressure of the vessel, the valve piston rests against a shoulder of the basic structure with its upper front surface while sealing the ventilation channel. For this purpose, e.g., a gasket configured as an O-ring may be provided between the front surface and the shoulder.

To guarantee sufficient clearance of the valve piston in the basic structure, an annular gap of more or less gap width exists between the two. When the valve piston is partially lifted off in downward direction out of its shut position, ventilation can also occur through this /4 annular gap. That is why, preferably, in a special embodiment of the invention, the valve piston bears a sleeve-like gasket on its bottom front surface, which shuts the ring gap between the basic structure and the piston in the shut position that is assumed under the vessel's internal pressure. By axially lifting off the valve piston out of its shut position by hand, the annular gap also becomes usable for ventilation.

Furthermore, in its lower axial end position, the valve piston may rest against an inside shoulder of the tightening nut with the sleeve-type gasket while sealing the annular gap between the basic structure and the

valve piston. At the beginning of the cooking process, only the ventilation channel that is adjacent to the heat sensor pin is thereby opened. With sufficient pressure buildup on the inside of the vessel, the valve piston then lifts off to its shut position in which the ventilation channel is also shut.

To operate the ventilation valve, a cam element may be rotatably carried in the lid's knob handle, which, upon rotation, brings about an axial displacement of the valve piston from its upper shut position against the vessel's internal pressure by means of a cam surface. The cam element can be of a configuration that is adapted to the lid's knob handle in such a way that the thermometer scale is arranged in an upper recess of an expanded section of the cam element, whereas the expanded section of the cam element, in turn, is retained in a depression of the lid's knob handle.

To avoid the danger of burns to the cook's hand when the /5
ventilation valve is operated, the ventilation channel and the annular gap between the basic structure and the valve piston is in a flow connection in the open position of the valve piston with an outlet pointing radially outward between the lid's knob handle and the lid wall.

Additional objectives, characterizing features, advantages, and options for the use of the invention will be revealed by the following description and configuration examples by means of the drawings. In this process, all of the characterizing features described and/or represented in the figures constitute the subject of the present invention either in and of themselves or in any sensible combination, without even being

contingent on how they are summarized in the Claims, or their interrelation.

Shown are:

Figure 1a, schematically, in a vertical section, the cooking vessel exhibiting the invention in the area of the lid's knob handle,

Figure 1b, the lid's knob handle of Figure 1a in a top view,

Figures 2a to 2c, in two lateral views and one view from the bottom, a molded structure for the transmission of the rotary movement of the cam element in an axial movement of the valve piston, which is provided in the invention, and

Figures 3a and 3b, two views of a basic structure provided by the invention for the lid's knob handle and the ventilation valve.

In the topmost location of its inside space (13), the cooking /6
vessel exhibits a thermometer (5) in the lid (4). For this purpose, the thermometer (5) projects through a central aperture (26) in the lid wall (15) into the vessel's inside space (13) by means of a heat sensor pin (14), while the thermometer scale is provided in a depressed recess (24). The thermometer (5) with the heat sensor pin (14) is retained in a cam element (11) and a basic structure (1). The basic structure (1) projects through an aperture (16) into the vessel's inside space (13) with a screw-threaded pin (17), whereas a tightening nut (2) is screwed on the threaded pin (17) for fixation on the lid wall (15). Meanwhile, the basic structure (1) clamps fast a knob handle (3) of the lid on the top side

of the lid wall (15) with a centering ring shoulder (6c). The lid's knob handle (3) exhibits an upper depression (25) in which an expanded section of the cam element (11) is retained, which, in turn, exhibits the recess (24) for retaining the scale of the thermometer (5). An air-release valve is formed in the basic structure (1) in that a valve piston (6) is axially guided on the heat sensor pin (14). A ventilation channel (6a) resembling a screw-thread is kept clear between the valve piston's (6) surface and the surface of the heat sensor pin (14). An annular gap (21) of little width is provided between the circumferential surface of the cylindrical valve piston (6) and the basic structure (1). In the shut position that is shown in Fig. 1a, with an upper front surface (18), the valve piston (6) rests against a shoulder (19) of the basic structure (1) in which a gasket (7) configured as an O-ring is arranged in such a way that the upper outlet of the ventilation channel (6a) is shut. In a lower front surface (20), the valve structure (6) bears a sleeve-type gasket (8) which reaches over the annular gap (21) with an outside edge and which thereby seals it in the shut position shown. In the pressure-less state, the valve structure (6) sits on an inside shoulder (22) of the tightening nut (2) with the gasket (8), so that in this lower end position, /7
an exiting of steam through the annular gap (21) is prevented. The cam element (11), which is equipped with an operating lever (11a) and which is rotatably carried around the center axis (12) inside the lid's knob handle (3), has a cam surface (11b) on its bottom side which acts together with a complementary cam surface (9b) on the top side of a separate molded piece (9) (specifically compare Figs. 2a to 2c). With their cam surfaces

(9b, 11b), the molded piece (9) and the cam element (11) are pressed against each other with the assistance of a spring (10), which, on the one hand, supports itself on the shoulder (6c) of the basic structure (1) and, on the other hand, supports itself on the shoulder (9c) of the molded piece (9). With downward extending pins (9a), the molded piece (9) grips into appropriate notches (6b) (specifically compare Fig. 3b) of the valve piston (6). As a result, when the cam element (11) is rotated, the molded piece (9) and, hence, also the valve piston (6), against the action of the spring (10), is pressed axially downward out of the shut position that is shown in Figure 1a against the vessel's internal pressure, so that ventilation can occur through the ventilation channel (6a) and the annular gap (11). Both are in a flow connection with an outlet (23) which leads radially outwards between the lid's knob handle (3) and the top side of the lid wall (15).

Therefore, a compact unit is being proposed with the invention in which both a thermometer (5) and an air release valve that is assigned to the thermometer in a functionally advantageous manner are provided inside the lid's knob handle (3) and, more specifically, both are provided at the topmost location of the pot's inside space (13). Because the exiting air-steam mixture passes by the heat sensor pin (14) of the thermometer (5), a rapid response and, hence, an accurate measurement of the temperature is possible in the inside space of the vessel (13). Adverse effects of air cushions in the area of the thermometer (5) are prevented.

List of Reference Symbols: /8

1	basic structure
2	tightening nut
3	lid's knob handle
4	lid
5	thermometer
6	valve piston
6a	ventilation channel
6b	notches
6c	shoulder
7	gasket
8	gasket
9	molded piece
9a	pin
9b	cam surface
9c	shoulder
10	spring
11	cam element
11a	operating lever
11b	cam surface
12	center axis
13	vessel's inside space
14	heat sensor pin
15	lid wall
16	aperture

17 screw-threaded pin

18 upper front surface

19 shoulder

20 lower front surface

21 annular gap

22 inside shoulder /9

23 outlet

24 spare

25 depression

Patent Claims /10

1. Cooking vessel, specifically, steam pressure cooker, the lid (4) of which is equipped with a thermometer (5), characterized in that the thermometer (5) is provided in the topmost location of the vessel's inside space (13).

2. Cooking vessel in accordance with Claim 1, characterized in that the thermometer (5) projects into the vessel's inside space (13) by means of a heat sensor pin (14).

3. Cooking vessel in accordance with Claim 2, characterized in that a ventilation channel (6a) extends adjacently to the heat sensor pin (14).

4. Cooking vessel in accordance with Claim 3, characterized in that the ventilation channel (6a) is part of an air-release valve which can be arbitrarily opened.

5. Cooking vessel in accordance with Claim 4, characterized in that the air-release valve exhibits an axially movable valve piston (6),

which is movable into a shut position under the vessel's inside pressure and which is manually movable into an open position in relation to the ventilation channel (6a).

6. Cooking vessel in accordance with Claim 5, characterized in that the valve piston (6) is axially guided on the heat sensor pin (14) and the, preferably, screw-thread-like ventilation channel (6a) is formed between the valve piston (6) and the heat conducting pin (14).

7. Cooking vessel in accordance with any of the Claims 1 to 5, characterized in that the thermometer (5) is provided in a central knob handle (3) of the lid. /11

8. Cooking vessel in accordance with Claim 7, characterized in that the lid's knob handle (3) is held on the lid wall (15) by means of a basic structure (1) which is fixated on the lid wall (15) by means of a screw-threaded pin (17) which projects through the lid wall (15) and a tightening nut (2) that is screwed on it.

9. Cooking vessel in accordance with Claim 8, characterized in that the valve piston (6) is axially guided inside the basic structure (1).

10. Cooking vessel in accordance with Claim 8 or 9, characterized in that, in its upper shut position that is assumed under the vessel's internal pressure, the valve piston (6) rests on a shoulder (19) of the basic structure (1) with its upper front surface (18) while sealing the ventilation channel (6a).

11. Cooking vessel in accordance with any of the Claims 8 to 10, characterized in that the valve piston (6) bears a sleeve-type gasket

(8) on its lower front surface (20), which, in the shut position of the valve piston (6) that is assumed under the vessel's internal pressure, closes off an annular gap (21) between the basic structure (1) and the piston (6).

12. Cooking vessel in accordance with Claim 11, characterized in that, in its lower axial end position, the valve piston (6) rests on an inside shoulder (22) of the tightening nut (2) with the sleeve-type gasket (8) while sealing off the annular gap (21) between the basic structure (1) and the valve piston (6).

13. Cooking vessel in accordance with any of the Claims 6 to /12
12, characterized in that a cam element (11) is rotatably carried inside the lid's knob handle (3), which, upon rotation, brings about an axial displacement of the valve piston (6) from its upper shut position against the vessel's internal pressure by means of a cam surface (11b).

14. Cooking vessel in accordance with any of the Claims 6 to 13, characterized in that, in the open position of the valve piston (6), the ventilation channel (6a) and the annular gap (21) between the basic structure (1) and the valve piston (6) are in a flow connection with a radially outward-pointing outlet (23) between the lid's knob handle (3) and the lid wall (15).

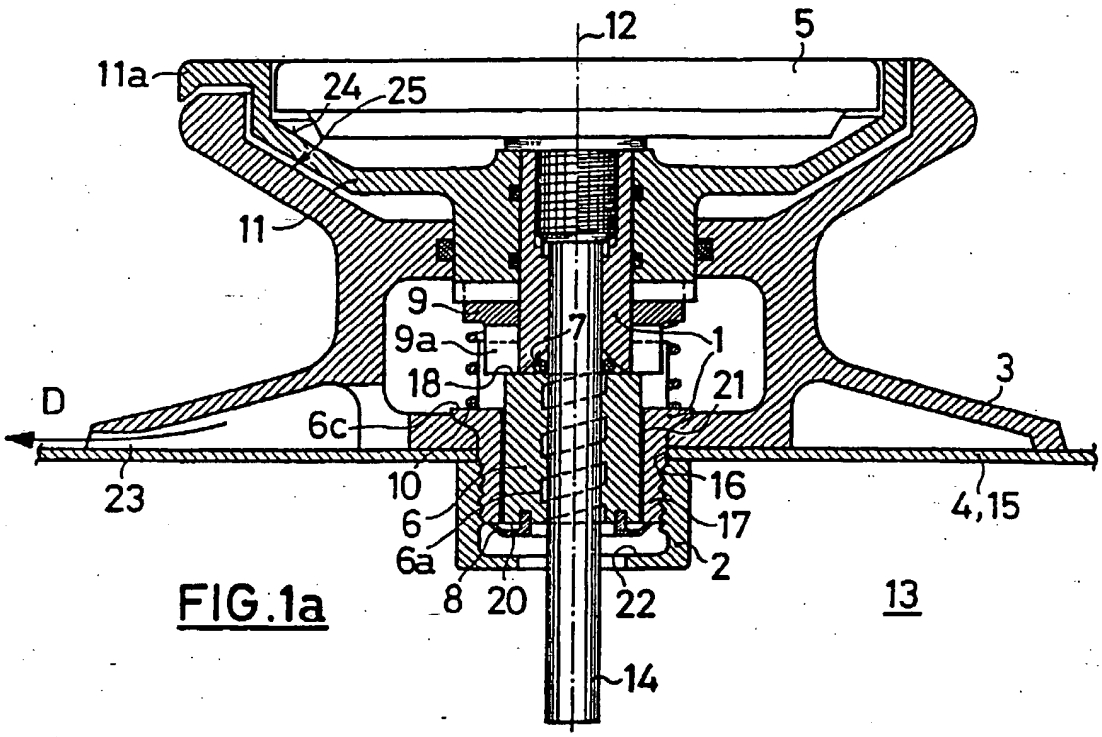
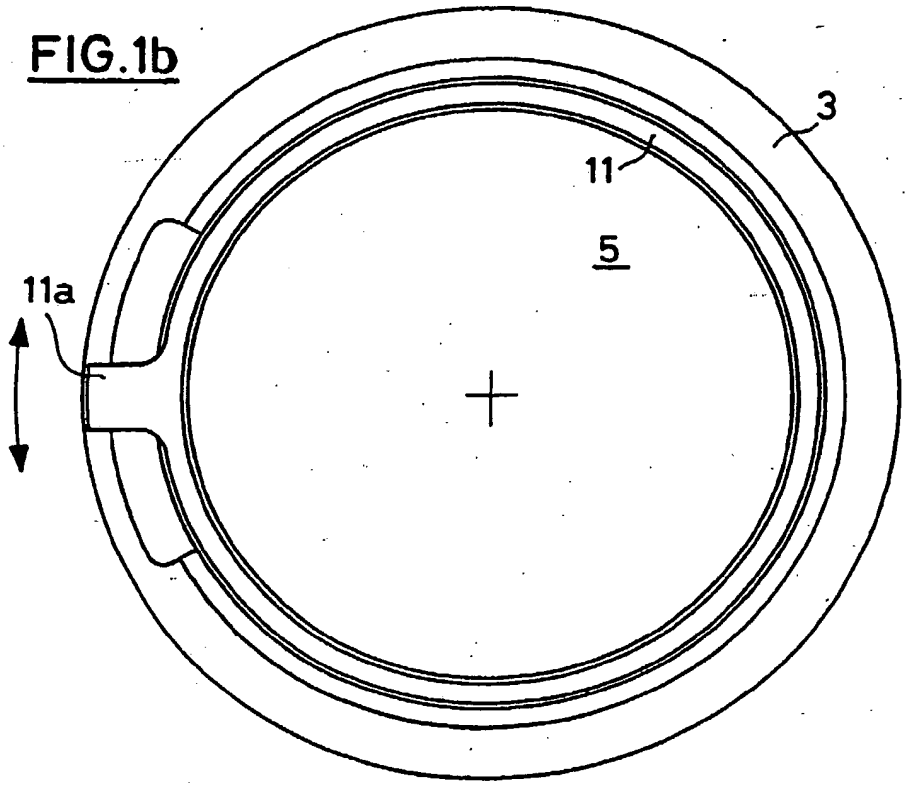

12
5
11a
24
25
11
9
9a
18
7
1
21
3
D
6c
23
10
6
6a
8
20
22
16
17
2
4,15
13
14

FIG.1a

FIG.1b


3
11
5
11a

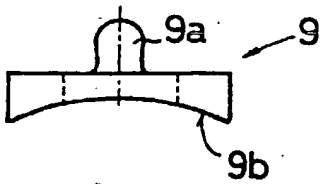


FIG.2a

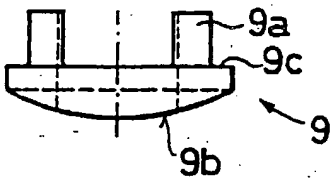


FIG.2b

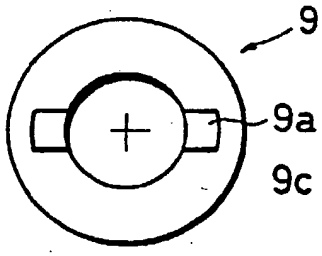


FIG.2c

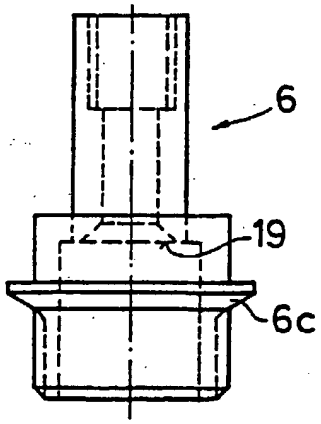


FIG.3a

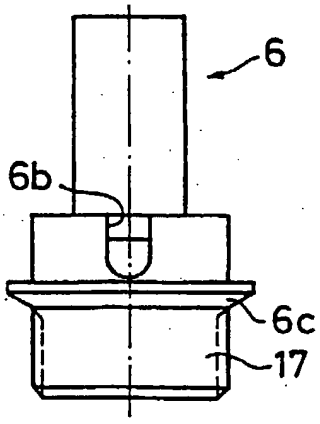


FIG.3b